Citrus Growers Can Reduce Nitrate Ground Water Pollution and Increase Profits by Using Foliar Urea Fertilization

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Objectives

The objective was to test the hypothesis that foliar urea applied within the period April 1 to June 1 can do triple duty as:

1. A "non-pesticide" to control citrus thrips and reduce fruit scarring,
2. A "growth regulator" to improve fruit set and increase yield without reducing fruit size or quality, and
3. A nitrogen fertilizer by supplying a portion of the N to be applied in a given year thus reducing the amount applied to the soil.

Summary

The research employed 17-year-old 'Frost nucellar' navel orange trees on Trifoliate orange rootstock under commercial production in the San Joaquin Valley. Replicated research from 1992 to 1993 showed that spring foliar applications of low-biuret urea had no statistically significant effect on fruit scarring caused by *Scirtothrips citri* determined as either on-tree evaluations of fruit on the outside of the tree during the first week of September, 1992 and 1993 or evaluation of total fruit per tree at harvest in March, 1993 and 1994. The results of the study provided clear evidence that foliar application of low-biuret urea had no negative effect on the population densities of beneficial predatory mite, *Euseius tularensis* (hibisci). There was no significant difference in the number of *E. tularensis* mites per leaf for trees on which 500 mites had been released in March 1992, independent of whether these trees were left as controls or subsequently sprayed with low-biuret urea. The number of mites per leaf was not due to a natural increase in the population during the course of study, since the control trees on which no mites were released had significantly lower numbers of mites per leaf.

The results also demonstrated that a late May application of low-biuret urea to the foliage is a cost effective mean to fertilize navel oranges. The performance of urea in reducing the percentage of fruit scarred by citrus thrips was consistent for two years. While non-significant at the 5% level, results showed that some dates of foliar application of N fertilizer might be more effective than others. Late May applications have less severe scarring as compared to late April which had more scarring. The increase in yield of larger-sized fruits observed in both years of the study for the late May foliar application of low-biuret urea resulted in a net increase in return revenue to the grower each year. Since the grower will likely

fertilize with N some time during the year anyway, foliar application of urea in late May would seem to afford many benefits over soil-applied N.